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Notes on Rosaceae—X

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RUBUS HYBRIDS

Hybrids are rather common in the genus *Rubus*, especially among the blackberries. Numerous hybrids have been admitted in Europe. The only really good attempt made to segregate hybrid forms in America, was that by Mr. Bicknell.* Mr. Bicknell studied these forms in the field and in most cases found the supposed parents growing in the immediate vicinity. I also have studied blackberry hybrids two summers in the Adirondacks, the Catskills, the mountains of southwestern Virginia, western North Carolina, and eastern Tennessee, and around Ottawa, Canada. It is a pity that it never occurred to Mr. Blanchard, who did so much valuable work on the blackberries, to explain the numerous forms as, partly at least, due to hybridity. It would not have been very hard to determine whether or not many of his new species probably had arisen through hybridizing. Mr. Bicknell, without having seen many of Mr. Blanchard's species in the field, reduced nearly all of them into hybrids or into synonyms of older species.

I think that his interpretation was correct in the majority of cases, but that he went too far in his reduction in some others. It is risky to make pronunciations without seeing the species in the field, and my course in the North American Flora was perhaps not so wise. It may have been better to leave many of the supposed species as such than to pronounce them as hybrids, without any better proofs than the finding of intermediate and intergrading characters. No definite conclusion can be had, however, without experimental work in crossing. The only alternative course to pursue would have been to admit all the proposed species as such and to describe twice as many more, most of them without any definite distinctive characters. In such a case, a key would have been impossible to make.

* Bull. Torrey Club 38: 103-133. 1911.

The following ninety-three tentative hybrids have been recorded. Their essential characters have been pointed out in the North American Flora, but in that work no specimens are cited, except the types of new species and the first records of new hybrids. It is, however, valuable to students of the brambles to know what specimens the monographer regarded as such hybrids. I have, therefore, prepared the following list of specimens.

Rubus acaulis × *stellatus*.

ALASKA: 1885, *Huff*; Copper Center, *Heidman* 88.

Rubus acaulis × *pubescens*. *Rubus propinquus* Richardson is regarded as a synonym of this.

MACKENZIE: Hay River, July 1, 1903, *Preble & Cary* 25; wooded country, *Richardson*.

Rubus arcticus × *pubescens*.*

QUEBEC: Mt. Albert, Gaspé County, 1906, *Fernald & Collins* 623a; Table-top Mountain, *Fernald & Collins* 617.

Rubus arcticus × *saxatilis* (*R. castoreus* Frees). No locality has been recorded on this side of the Atlantic, but it may be expected in northeastern Canada.

Rubus idaeus × *spectabilis*. This is unknown except as a garden plant, and it is natural that it should be so, as *Rubus idaeus* and *R. spectabilis* have no common territory where both grow wild. Indigenous hybrids of *R. spectabilis* and species related to *R. idaeus* have been collected in Alaska, viz., the two following:

Rubus spectabilis × *viburnifolius*.

ALASKA: Lake Clark, 1902, *Gorman*.

Rubus spectabilis × *subarcticus*.

ALASKA: Camp 53, 1899, *Shrader*.

Rubus occidentalis × *rosaefolius*. Known only as a garden hybrid.

Rubus idaeus × *ursinus*. Only known as a spontaneous garden hybrid, which is under cultivation as the Logan Berry.

Rubus idaeus × *phoenicolasius*. *R. Paxii* Focke. Only known as a garden hybrid.

* In answer to a letter to Dr. Fernald suggesting that the plant collected by him and Mr. Collins was a hybrid, I received the following reply: "I have no doubt that the plants you refer to are hybrids of *Rubus triflorus* and *arcticus*. Such specimens are found in small colonies throughout Gaspé, Newfoundland, and southern Labrador, wherever *R. arcticus* occurs."

Rubus occidentalis × *strigosus* (*R. neglectus* Peck; *Melanobatus neglectus* and *M. michiganus* Greene). This is a rather common hybrid and it would be superfluous to cite specimens. Sometimes it resembles more one parent, sometimes the other. The original *R. neglectus* is most like *R. occidentalis*, while *Melanobatus michiganus* approaches *R. strigosus*.

Rubus occidentalis × *procumbens*. The very interesting plant, which I referred to this hybrid, was collected by Commons nearly forty years ago. Commons recognized it as a hybrid of *R. occidentalis* but made no suggestion of the other parent. This is evidently a member of the *Eubatus* section, apparently to be sought among the dewberries, and most likely *R. procumbens*. Mr. Commons remarks: "I tried to perpetuate this by sowing the seeds at various times, but not one came up."

Rubus leucodermis × *melanolasius*.

BRITISH COLUMBIA: near international boundary between Kettle and Columbia River, *J. M. Macoun* 64002; Chilliwack Valley, *J. M. Macoun* 34805; also 7035 and 69970 from British Columbia.

MONTANA: Belton, 1903, *Umbach* 698; McDonald's Lake, 1909, *M. E. Jones*.

OREGON: Eastern Oregon, 1897, *Cusick* 1729.

WASHINGTON: 1897, *Horner* 163.

Rubus macropetalus × *viburnifolius*. No other specimen but the original one, *Mr. & Mrs. C. Van Brunt* 121, from Glacier, British Columbia, has been seen of this hybrid.

Rubus idaeus × *strigosus*. This is not uncommon in cultivation, but no record of it in a wild state has been made.

Rubus argutus × *cuneifolius*. This was first recognized as a hybrid by Mr. Bicknell. The same form had also been collected by Britton & Hollick, who did not venture to name it. Their specimens were determined as *R. Andrewsianus* by Mr. Blanchard, but the dense grayish pubescence of the under leaves is not found in that species. All the specimens seen are from the sandy coast strip.

NEW JERSEY: Atlantic Highlands, 1906, *Hollick & Britton*; Toms River, 1900, *Bicknell* 90.

Rubus cuneifolius $\times$ *floridus*. What I regard as this hybrid is one much resembling the last hybrid but a weaker plant with more curved prickles. Judging from the analogy, it is not improbable that this plant is such a hybrid, as it differs from *R. argutus* $\times$ *cuneifolius* in the same characters as does *R. floridus* from *R. argutus*, and both *R. floridus* and *R. cuneifolius* are found in the district where the supposed hybrid has been found. Mr. Ashe distributed it mixed with *R. cuneifolius*.

VIRGINIA: Ocean View, Norfolk, 1898, *Kearney* 1212.

NORTH CAROLINA: Chapel Hill, *Ashe*, mixed with *R. cuneifolius*.

Rubus cuneifolius $\times$ *lucidus*. Mr. Nash collected specimens near Eustis, Florida, which resemble *R. cuneifolius* in many respects, but the leaves are larger, more acute and more coarsely serrate. He determined them doubtfully as *R. cuneifolius*. Similar specimens were also collected by Chapman, in Duval County, Florida, together with *R. cuneifolius*. He also has collected *R. lucidus* in the same county.

FLORIDA: Duval County, *Chapman* 2832, mostly; Eustis, 1894, *Nash* 70.

Rubus cuneifolius $\times$ *trivialis*. Somewhat similar specimens were collected by Coker at Hartville, South Carolina, but in these the plant is prostrate, the flowers mostly solitary, and in habit it resembles more *R. trivialis*. These specimens I regard as *R. cuneifolius* $\times$ *trivialis*.

Rubus canadensis $\times$ *sativus*. The specimens which I regard as this hybrid were originally labeled *R. canadensis*, but Mr. Blanchard has afterwards written on the sheets "A var. or form of *R. can.* W. H. B." It is evidently not pure *R. canadensis* for the inflorescence is glandular and the leaflets of the new shoots are broadly cordate and abruptly acuminate as in *R. sativus*.

VERMONT: Windham, June 6, 1903, *Blanchard* 265.

Rubus nigricans $\times$ *sativus*. I have no positive evidence that *R. frondisensis* Blanchard is such a hybrid, but the plant combines characters of the two species, and is found where the ranges of the two species overlap. It is also a very local plant and has not been collected except at the original station.

Rubus argutus $\times$ *nigrobaccus*. This hybrid was first recog-

nized by Mr. Bicknell, but he used the name *R. allegheniensis* $\times$ *argutus*, following Blanchard and Fernald in interpreting *R. allegheniensis*. The plant is not uncommon and the following specimens are referred here.

NEW YORK: Lynbrook, Long Island, 1901, *Bicknell* 36; Elizabethtown, Essex County, 1900, *Macy*; Bronx Park, 1896, *Nash*; Highland Falls, 1910, *Mearns* 50.

MASSACHUSETTS: Quaise, Nantucket Island, 1910, *Bicknell* 33; Shawaukemmo Spring, Nantucket Island, *Bicknell* 35; Canton, near Boston, 1906, *Blanchard* 99, set 9.

VIRGINIA: Rosslyn, 1897, *Kearney*.

CONNECTICUT: Southington, 1904, *Andrews* 3.

PENNSYLVANIA: Tannersville, 1901, *Britton*.

NEW JERSEY: Clifton, 1890, *Nash* 900; Paramus Swamp, Bergen County, *Nash* 947; also *Mackenzie* 2086.

Rubus frondosus $\times$ *nigrobaccus*. This was also first recognized as a hybrid by Bicknell, although he included in it specimens which I do not think belong to it but rather to *R. nigrobaccus* $\times$ *recurvans*. It was not at all unnatural that he should do so, as he did not recognize *R. recurvans* as a distinct species.

MASSACHUSETTS: Shawaukemmo Spring, Nantucket Island, 1908, *Bicknell* 20.

NEW YORK: Jamaica, Long Island, 1901, *Bicknell* 25; Port Washington, *Bicknell* 21, 23; Franklin Square, *Bicknell* 19.

PENNSYLVANIA: north of Philadelphia, 1906, *Blanchard* 100, Set 6; Lancaster County, 1894, *Ely*.

NEW JERSEY: Succasunna, 1909, *Mackenzie* 4123.

Rubus canadensis $\times$ *nigrobaccus*. This hybrid was first recognized by myself when I studied the blackberries in the Catskills, 1906, at Tannersville, where it grew together with *R. nigrobaccus* and *R. canadensis*. I also saw it in the Adirondacks and in southwestern Virginia.

NEW YORK: Tannersville, 1906, *Rydberg* 7974; Little Moose Lake, 1906, *Rydberg* 7820a; Stanford, 1909, *Taylor* 712; Tannersville, 1892, *Vail*; North Harpersfield, *Topping* 132.

MASSACHUSETTS: Tyringham, Berkshire County, 1897, *Vail*.

VERMONT: Grafton, 1902, *Blanchard* 177; Simonsville, *Blanchard* 183; Rutland, 1902, *Eggleston* 2884.

VIRGINIA: White Top Mountain, 1908, *Rydberg 8104*; between Marion and White Top Mountains, *Rydberg 8138*.

NORTH CAROLINA: Graham County, 1897, *Biltmore Herbarium 1307c*.

NEW BRUNSWICK: Grand Falls, *Macoun 21181*.

Rubus amicalis $\times$ *nigrobaccus*. Comparing the specimens referred here with *R. canadensis* $\times$ *nigrobaccus*, I came to the conclusion that this must be a hybrid of the species mentioned. They were collected by Arthur at Isle au Haut, Maine.

Rubus nigrobaccus $\times$ *Randii*. This was first recognized by myself while collecting in the Adirondacks. Both parents grew in the vicinity. Subsequently I thought it was the same as *R. frondisensis* Blanchard, but I have found it is not. None except the original specimens have been seen.

Rubus nigrobaccus $\times$ *pergratus*. The following specimens I think belong to this hybrid. They were collected near the type locality of *R. amicalis* $\times$ *nigrobaccus*. *Rubus pergratus* is also common in the region.

MAINE: Isle au Haut, 1909, *Arthur 55, 56*.

Rubus heterophyllus $\times$ *nigrobaccus*. I have no evidence that the specimens referred here belong to a hybrid except that the plant combines the habit and glandular pubescence of *R. nigrobaccus* with the leaf cut of *R. heterophyllus*. The original specimens are the only ones seen.

Rubus nigricans $\times$ *nigrobaccus*. This I collected at Kingsmere Lake, Quebec, where both *R. nigricans* and *R. nigrobaccus* were growing. I have no doubt but my specimens were of hybrid origin. I cannot distinguish them from specimens of *R. glandicaulis* distributed by Mr. Blanchard. *R. biformispinus* Blanchard I think is also a hybrid of the same two species, though approaching *R. nigricans* more than *R. nigrobaccus*. The following specimens belong here:

QUEBEC: Kingsmere Lake, 1906, *Rydberg 7946*.

NEW BRUNSWICK: Frederickstown, *Blanchard 606*.

MAINE: Yarmouth, 1909, *Blanchard 507*; Brownville, *Blanchard 508*; Bar Harbor, *Blanchard 509*; Calais, *Blanchard 510*; Isle au Haut, 1909, *Arthur 52*; Kennebunk, 1905, *Blanchard 74, Sets 1, 2*; Kennebunkport, 1905, *Blanchard 79*.

NOVA SCOTIA: Granville, 1909, *Blanchard* 718, 727; Yarmouth, *Blanchard* 728.

Rubus nigrobaccus $\times$ *vermontanus*. If *R. glandicaulis* is a hybrid between *R. nigrobaccus* and *R. nigricans*, *R. frondisensis* is very likely a hybrid between the former and *R. vermontanus*.

VERMONT: Townshead, 1903 and 1904, *Blanchard* 243, 244; Huntington, 1903, *Blanchard* 257.

Rubus hispidus $\times$ *nigrobaccus*. *R. permixtus* Blanchard stands in the same relation to *R. hispidus* as *R. glandicaulis* does to *R. nigricans*, I therefore do not hesitate in regarding it as a hybrid between *R. nigrobaccus* and that species.

VERMONT: Westminster 1902 and 1903, *Blanchard* 225, 226, 227, 229; Putney, 1902, *Blanchard* 228; Westminster, 1903, *Eggleston* 3245.

NEW HAMPSHIRE: Walpole, 1903, *Blanchard* 233.

NOVA SCOTIA: Macoun 81438, 81439.

Rubus argutus $\times$ *frondosus*. This was first recognized by Mr. Bicknell.

NEW YORK: Rockville Center, Long Island, 1906, *Bicknell* 38; between Yonkers and Mount Vernon, 1902, *Burnham*.

CONNECTICUT: Southington, 1905, *Blanchard* 99, set 1; 1904, *Andrews* 27.

Rubus argutus $\times$ *recurvans*. This was included in *R. argutus* $\times$ *frondosus* by Bicknell, who did not regard *R. frondosus* and *R. recurvans* distinct.

MASSACHUSETTS: Quaise, Nantucket Island, 1909, *Bicknell* 34.

NEW YORK: Cedarhurst, Long Island, 1910, *Bicknell* 37.

Rubus argutus $\times$ *Baileyanus*. This was also segregated out by Mr. Bicknell.

MASSACHUSETTS: below the "Cliff," Nantucket Island, 1910, *Bicknell* 40.

NEW YORK: East Rockaway Bog, Long Island, 1908, *Bicknell* 41; also at Hawlett, *Bicknell* 42.

Rubus argutus $\times$ *Enslenii*. This was also recognized by Mr. Bicknell, although he did not publish the same. His specimens closely match the type of *R. ostryifolius* Rydb., which I now do not hesitate in regarding as this hybrid.

NEW YORK: Hempstead Plains, Long Island, 1910, *Bicknell* 65; Lynbrook, *Bicknell* 62, 64, 66.

NEW JERSEY: Highlands, *Britton*; Ogdensburg, 1910, *Mackenzie* 4625; South Amboy, 1905, *Mackenzie* 1376.

VIRGINIA: Norfolk, 1898, *Kearney* 1365.

Rubus argutus $\times$ *carpinifolius*. Both Engelmann and Bailey recognized this as a hybrid, regarding one of the parents as *R. trivialis* from which *R. carpinifolius* was not separated at that time. Bailey thought that the other parent was *R. argutus*. Engelmann gave it as *R. villosus*, under which name both *R. argutus* and *R. nigrobaccus* were then known.

MISSOURI: St. Louis, 1863, *Engelmann*; Cahokia, 1863, *Engelmann*.

Rubus floridus $\times$ *lucidus*. In the description of *R. persistens* Rydb. two different plants were included. Unfortunately, it happened that the specimen which was assigned as the type evidently belongs to a hybrid of *R. floridus* and a species then unknown. *R. persistens*, therefore, must pass into synonymy.

Rubus carpinifolius $\times$ *floridus*. Dr. Engelmann regarded the original specimen of this hybrid as a variety of *R. trivialis*. It is more likely that it is a hybrid of *R. carpinifolius*, which at his time was not distinguished from *R. trivialis*, and *R. floridus*, which is also found in Texas.

TEXAS: Houston, 1842, *Lindheimer*.

Rubus floridus $\times$ *frondosus*. Some specimens collected at Bluff Lake, Missouri, by Eggert probably belong to a hybrid between *R. floridus* and *R. frondosus*. The only reason for believing so is that they combine characters of both and were found in a region common to both.

MISSOURI: Bluff Lake, *Eggert*.

TENNESSEE: Knoxville, 1896, *Ruth*.

Rubus Enslenii $\times$ *frondosus*. This was first recognized by Mr. Bicknell and well described by him.

NEW YORK: Hempstead Plains, Long Island, 1906, *Bicknell*, 48, 49, 70.

MASSACHUSETTS: Nantucket Island, 1906, *Bicknell* 47.

Rubus frondosus $\times$ *procumbens*. I have no definite evidence

that *R. Rossbergianus* is a hybrid of *R. frondosus* and *R. procumbens*, but the habit is intermediate between the two; the leaves resemble in form those of *R. frondosus*, but are harsher; and the stem is light colored, tough and prickly as in *R. procumbens*. Both are found in the region.

CONNECTICUT: Southington, 1905, *Blanchard* 89, set 1-3; Graniteville, *Blanchard* 89, set 3; Canton, *Blanchard* 89, set 5; Southington, 1904, *Andrews* 21, 22, 23, 31, 33, 35.

NEW JERSEY: Tuckerton, *Mackenzie*.

Rubus frondosus $\times$ *hispidus*. Also one of Mr. Bicknell's hybrids, collected only at the original station and vicinity, *Bicknell* 43, 69.

Rubus canadensis $\times$ *recurvans*. The specimens from which *R. recurvans subrecurvans* was described approach *R. canadensis* L. in so many respects, such as the form of the leaves, the inflorescence, and the weakly developed armature of the stems, that I have regarded it as a hybrid with that species.

MAINE: Kennebunkport, 1905, *Blanchard* 71; York Beach, 1909, *Blanchard* 516.

Rubus Brainerdi $\times$ *vermontanus*. The specimens referred to this hybrid were collected at the type station of *R. Brainerdi* and together with it. *R. vermontanus* is common in the region.

VERMONT: Weybridge, *Brainerd*; also 1902, *Eggleston* 2894.

Rubus amicalis $\times$ *pergratus*. No specimens except the original ones have been seen.

Rubus argutus $\times$ *canadensis*. This was first recorded by myself from southwestern Virginia, but similar specimens have also been collected in the north.

VIRGINIA: road between Marion and White Top Mountain, 1908, *Rydberg* 8099; Chattam Hill Road, 1892, *Small*.

NORTH CAROLINA: Biltmore, 1909, *Crafton & Eggleston*, 4416.

NEW JERSEY: Greenwood Lake, 1907, *Mackenzie* 2675; Ogdensburg, 1910, *Mackenzie* 4625.

Rubus canadensis $\times$ *Randii*. This was first recorded by myself from the Adirondacks, where both parents grow.

NEW YORK: Little Moose Lake, 1906, *Rydberg* 7818; 7820; Twin Lakes, *Rydberg* 7842; East Lake, *Rydberg* 7861.

NOVA SCOTIA: Pictou, 1906, *C. B. Robinson* 528.

Rubus canadensis $\times$ *pergratus*. Also first recorded by myself at Tannersville, New York, 7960, 7961.

Rubus Baileyanus $\times$ *canadensis*. The specimens originally recorded as this hybrid were collected near an artificial lake or reservoir above Sparta, New Jersey. *R. canadensis* was growing in the neighborhood but *R. Baileyanus* was not collected there. The habit of the plant and the poor fruiting indicate a hybrid of *R. canadensis* and, probably, *R. Baileyanus*. To this belong:

NEW JERSEY: Morris Lake, Sparta, 1906, *Rydberg* 7992; Montague Township, Sussex County, 1909, *Nash*; Midvale, 1908, *Rydberg* 8016.

NOVA SCOTIA: *Macoun* 81433, 81431.

Rubus elegantulus $\times$ *nigrobaccus*. *Rubus flavinanus* Blanchard evidently represents this hybrid. The plant is decidedly intermediate between the two. None except Blanchard's specimens have been seen.

Rubus Baileyanus $\times$ *nigrobaccus*. This was first recognized as a hybrid by Mr. Bicknell, who, however, did not publish the same. The following specimens belong here:

NEW YORK: Smithtown, Long Island, 1910, *Bicknell* 17, 24.

PENNSYLVANIA: Presque Isle, Erie, *Otto Kuntze* 2671.

NEW JERSEY: Midvale, 1908, *Rydberg* 8017.

Rubus Baileyanus $\times$ *procumbens*. This has been known for fifteen years or more and is even in cultivation, but it was first regarded as a variety of *R. procumbens*, and later as a distinct species under the name *R. roribaccus*. Mr. Bicknell was the first one to recognize it as a hybrid. Some of his specimens match very closely the original ones distributed by Professor Bailey.

MASSACHUSETTS: Nantucket Island, 1910, *Bicknell* 8.

NEW YORK: Cedarhurst, Long Island, 1910, *Bicknell* 6; Aqueduct, 1905, *Bicknell* 7.

NEW JERSEY: Ledgewood, 1909, *Mackenzie* 4127; Succasunna, *Mackenzie* 4126.

VIRGINIA: Glade Springs, 1908, *Rydberg* 8148; Fairfax, 1906, *Blanchard* 101, set 3.

PENNSYLVANIA: Willow Grove Park, 1906, *Blanchard* 101, set 2; Lancaster, *Blanchard* 101, set 1.

CONNECTICUT: Southington, 1906, *Blanchard* 101, set 5½.

MISSOURI: Little Blue Tank, 1897, *Mackenzie* 210.

IOWA: Papoose Creek, 1894, *Mackenzie* 681.

Rubus Baileyanus × *frondosus*. First segregated by Mr. Bicknell.

MASSACHUSETTS: Quaise, Marcy's Pond, below the "Cliff," and Squam, Nantucket Island, 1910, *Bicknell* 85, 86, 88, 87, 84.

NEW JERSEY: Budd's Lake, 1905, *Eggleston* 0; Mt. Arlington, 1905, *Mackenzie* 1402; Stanhope, 2085; Berkeley Heights, 2047.

Rubus Baileyanus × *hispidus*. This was at first included in *R. hispidus* × *procumbens* by Bicknell. He, however, determined his Long Island material as *R. Baileyanus* × *hispidus*.

NEW YORK: Aqueduct, Long Island, 1905, *Bicknell* 73.

NEW JERSEY: near Musconetcony River, 1906, *Mackenzie* 2107.

MASSACHUSETTS: Reed Pond, Nantucket Island, 1910, *Bicknell* 75; Reading, 1897, *Kingman*.

Rubus Baileyanus × *carpinifolius*. Another plant collected by Eggert at Bluff Lake, Missouri, in 1878 must be, on account of the combination of characters, a hybrid between *R. Baileyanus* and *R. carpinifolius*, which both grow in the region.

Rubus arenicola × *hispidus*. The original specimens are the only ones seen of this hybrid.

Rubus nigrobaccus × *plicatifolius*. The specimen referred to this hybrid (*Blanchard* 516, sheet 1), was labeled by Mr. Blanchard *R. recurvans* var. *subrecurvans*, which variety I regard as a hybrid between *R. recurvans* and *R. canadensis*; but this number evidently does not belong there. The glandular pubescence of the inflorescence and the cut of the leaves in the specimens mentioned indicating *R. nigrobaccus* blood. The pubescence and the plication of the leaves suggest *R. plicatifolius*.

Rubus nigricans × *plicatifolius*. I regard *R. multiformis* Blanchard as a hybrid of *R. nigricans* and *R. plicatifolius*.

NOVA SCOTIA: Yarmouth, 1909, *Blanchard* 724; Annapolis *Blanchard* 726; Kentville, *Blanchard* 725.

MAINE: Bar Harbor, 1909, *Blanchard* 512; Kennebunkport, 1905, *Blanchard* 80.

QUEBEC: *Macoun* 67904.

Rubus canadensis $\times$ *plicatifolius*. The almost unarmed stem of *Rubus multiformis delicatior* Blanchard indicates a hybrid of *R. canadensis*. The plicate leaves suggest *R. plicatifolius*.

MAINE: Kennebunkport, 1905, *Blanchard* 81.

NOVA SCOTIA: Halifax, *Macoun* 81426.

Rubus hispidus $\times$ *plicatifolius*. *Rubus semierectus* Blanchard I take as a hybrid. The small flowers, bristly stem and broad leaflets suggest *R. hispidus*, the pubescent strongly veined and subplicate leaflets, *R. plicatifolius*.

MAINE: Kennebunk, 1905, *Blanchard* 67.

NEW YORK: vicinity of Tannersville, 1891, *Vail*.

NOVA SCOTIA: *Macoun* 5792, 19076.

Rubus heterophyllus $\times$ *recurvans*. No other specimens than those cited in the North American Flora, viz., *Blanchard* 256, from Huntington Hills, Massachusetts, have been seen which may be referred to this hybrid.

Rubus argutus $\times$ *flagellaris*. This as well as all the other hybrids of *R. flagellaris* were discovered by Mr. Bicknell. For specimens and notes see his paper in the Bull. Torrey Club 38: 103-133, 1911. The other hybrids are *Rubus flagellaris* $\times$ *frondosus*, *R. flagellaris* $\times$ *procumbens*, *R. Baileyanus* $\times$ *flagellaris*, *R. flagellaris* $\times$ *hispidus* and *R. flagellaris* $\times$ *Enslenii*.

Rubus nigrobaccus $\times$ *procumbens*. This was first recognized by Mr. Bicknell, but under the name *R. allegheniensis* $\times$ *procumbens*.

NEW YORK: Merrick, Long Island, 1910, *Bicknell* 30; Hewlett, *Bicknell* 28; Lynbrook, *Bicknell* 26.

MASSACHUSETTS: Wauwinet, Nantucket Island, 1910, *Bicknell* 27.

Rubus argutus $\times$ *procumbens*. This was also first recognized as a hybrid by Bicknell. *Rubus multispinus* Blanchard matches Bicknell's specimens very closely.

NEW YORK: Rockville Center, Long Island, 1909, *Bicknell*; Hewlett, *Bicknell* 68; Lawrence, *Bicknell* 67.

MASSACHUSETTS: Nantucket Island, 1899, *Bicknell* 29; 1910, *Bicknell*, 82, 83; Reheboth, 1906, *Blanchard* 96, set 2; Plymouth, 1906, *Blanchard* 96, set 3.

RHODE ISLAND: Rocky Point, 1906, *Blanchard 96, set 1.*

Rubus procumbens $\times$ *recurvans*. Many specimens from Connecticut resemble *R. procumbens* closely, but are more pubescent and with the leaves of the floral branches more incised. These I have regarded as hybrids with *R. recurvans*. They are:

CONNECTICUT: Southington, 1904, *Andrews 29, 28, 41, 61, 37, 34, 30*; Plainville, 1903, *Blanchard 222*; Winsted *Blanchard, 259.*

MASSACHUSETTS: Southwick, 1903, *Blanchard 253.*

Rubus pergratus $\times$ *procumbens*. *Rubus recurvicaulis* Blanchard seems to me a hybrid of *R. pergratus* and *R. procumbens*, combining characters of both. I have seen no specimens except those distributed by Mr. Blanchard.

Rubus canadensis $\times$ *procumbens*. *Rubus recurvicaulis inarmatus* stands to *R. canadensis* as *R. recurvicaulis* does to *R. pergratus*, and I believe also this to be a hybrid.

MAINE: Kennebunk, 1905, *Blanchard 67, 69.*

NOVA SCOTIA: North Sidney, 1907, *C. B. Robinson 616.*

Rubus hispidus $\times$ *procumbens*. This was first recognized by Mr. Bicknell. The following specimens belong here:

NEW YORK: Cypress Hill, 1905, *Bicknell 74.*

VERMONT: Londonderry, 1903, *Blanchard, 246*; Newfane, 1902, *Blanchard 186.*

NOVA SCOTIA: Boylston, 1890, *Chas. Hamilton, 19085.*

NEW JERSEY: Mt. Arlington, 1905, *Mackenzie 1404*; also 1904, *Mackenzie 903.*

Rubus Baileyanus $\times$ *Enslenii*. Also one of Mr. Bicknell's hybrids.

MASSACHUSETTS: Nantucket Island, 1908, *Bicknell 52, 54, 55.*

CONNECTICUT: New Haven, 1895, *Helen Ingersoll.*

NEW YORK: Woodmere, 1904, *Bicknell 56.*

DISTRICT OF COLUMBIA: Riverdale, 1901, *Steele.*

VIRGINIA: Marion, *N. L. & E. G. Britton & A. M. Vail.*

Rubus Enslenii $\times$ *procumbens*,

Rubus Baileyanus $\times$ *Enslenii*,

Rubus Enslenii $\times$ *flagellaris*, and

Rubus Enslenii $\times$ *hispidus*. Of these four hybrids, I have seen none but Mr. Bicknell's specimens. See Bull. Torrey Club 38: 130-131. 1911.

Rubus argutus $\times$ *nigricans*. I cannot distinguish *R. adscendens* Blanchard from Mr. Bicknell's hybrid. The following specimens belong here:

NEW YORK: Smithtown, Long Island, 1808, *Bicknell* 89.

NEW JERSEY: Allamuchy Mountains, 1906, *Mackenzie* 2108, 2300; Succasunna, 1909, *Mackenzie* 4153.

CONNECTICUT: Southington, 1906, *Blanchard* 90; 1903, *Blanchard* 262, 224; Londonderry, *Blanchard* 246; 1904, *Andrews* 53, 57, 56.

MASSACHUSETTS: Essex County, *Oakes*.

Rubus frondosus $\times$ *nigricans*. From this I cannot separate *Rubus abbrevians* Blanchard. The following specimens belong here:

MASSACHUSETTS: Long Pond and Trot's Swamp, Nantucket Island, 1910, *Bicknell* 31, 32.

CONNECTICUT: Southington, 1906, *Blanchard* 95.

VERMONT: Windham, 1904, *Blanchard* 57.

PENNSYLVANIA: Germantown, *Meehan* 8679.

Rubus nigricans $\times$ *recurvans*. *R. semisetosus* Blanchard I regard as a hybrid between *R. nigricans* and *R. recurvans*. The following specimens belong here:

CONNECTICUT: Southington, 1903, *Blanchard* 201, 202, 225; Londonderry, *Blanchard* 247; Plainville, 1906, *Blanchard* 91, set 1; also 1903, 261, 203.

RHODE ISLAND: Rocky Point, 1906, *Blanchard* 91, set 3.

NOVA SCOTIA: Sable Island, *Macoun* 21193, 21183 (these specimens are doubtful).

Rubus amicalis $\times$ *nigricans*. *Rubus tardatus* Blanchard is probably also a hybrid, the parents being *R. amicalis* and *R. nigricans*. Mr. Blanchard's specimens are the only ones seen.

Rubus nigricans $\times$ *pergratus*. In my opinion *R. peculiaris* Blanchard is also a hybrid, viz., of *R. nigricans* and *R. pergratus*. Besides Mr. Blanchard's specimens the following belong here:

QUEBEC: vicinity of Montmorency Falls, 1905, *Macoun* 67904, 67905.

Rubus canadensis $\times$ *nigricans*. *Rubus junceus* Blanchard is probably also a hybrid. Besides the specimens distributed by Mr. Blanchard, the following are referred to it.

ONTARIO: Cranberry Lake, Algonquin Park, 1900, *Macoun 24696a*.

MAINE: Sangerville, 1895, *Fernald 244*.

Rubus nigricans $\times$ *Randii*. Only the specimens of the original collection have been recorded.

Rubus Baileyanus $\times$ *nigricans*. This was first recognized by Mr. Bicknell. C. C. Curtis's specimens have much narrower leaflets and are doubtfully referred to it.

NEW YORK: Hempstead Plains, 1910, *Bicknell 15*; between Yonkers and Mount Vernon, 1903, C. C. Curtis; Van Courtlandt Park, 1896, *Bicknell*.

CONNECTICUT: Plainville, 1904, *Andrews 26*; Southington, 1903, *Blanchard 237* (determined as *R. semisetosus*).

Rubus flagellaris $\times$ *nigricans*. This was collected by Mr. Bicknell, who included it in *R. nigricans*. The following specimens so named I refer to the hybrid instead.

MASSACHUSETTS: Little Neck, Millbrook Swamp and Long Pond, Nantucket Island, 1910, *Bicknell X, XX, XXX*.

Rubus nigricans $\times$ *procumbens*. This was also recognized as a hybrid although he did not describe the same. The following specimens belong to it:

NEW YORK: East Hempstead, Long Island, 1910, *Bicknell 16*; Jamaica, 1906, *Bicknell 18*.

CONNECTICUT: Plainville, 1904, *Andrews 55*; Southington, *Andrews 54, 57, 58, 59, 62*.

VERMONT: Londonderry, 1903, *Blanchard 245* (referred doubtfully to *R. vermontanus*).

NOVA SCOTIA: *Macoun 81425*; Sable Island, *Macoun 21193*.

Rubus nigricans $\times$ *vermontanus*. *Rubus vermontanus viridifolius* has glandular hispid inflorescence and I therefore believe it contains some *R. nigricans* blood in it. I therefore regarded it as a hybrid. Many specimens referred to *R. setosus* by Blanchard belong here:

VERMONT: Marlboro, 1902, *Blanchard 191*; Woodstock, 1910, *Britton*; Stockbridge, 1897, *Eggleston*; West Windham, 1904, *Blanchard 59, set 1*; Stratton, 59, *Blanchard, set 2*; Rutland, 1899, *Eggleston 1228*.

NEW YORK: Tannersville, 1906, *Rydberg* 7954.

NEW HAMPSHIRE: Alstead, 1903, *Blanchard* 236, 234, 235.

MAINE: Biddeford, 1905, *Blanchard* 86.

QUEBEC: East Templeton, 1903, *Macoun* 59963.

Rubus hispidus $\times$ *nigricans*. Mr. Bicknell found this very variable, sometimes approaching one parent, sometimes the other. My observations agree very well with his. Often the plant resembles a robust *R. hispidus*, but with the leaflets of the new shoots having a tendency often to be five instead of three. It is then *R. hispidus major* Blanchard. Sometimes it resembles more *R. nigricans* in habit. If the leaflets of the new shoots happen to be only three, it is *R. trifrons* Blanchard. The following represent *R. hispidus major*:

CONNECTICUT: Southington, 1904, *Andrews* 60; Botsford, 1897, *Eames*.

MAINE: Kennebunkport, 1905, *Blanchard* 84; Kennebunk, *Blanchard* 85.

NOVA SCOTIA: Cape Breton, 1901, *Howe & Lang* 748; Pictou, 1907, *C. B. Robinson* 574, 494.

MASSACHUSETTS: 1879, *Perkins*.

PENNSYLVANIA: Pocono Plateau, 1893, *Britton*.

NEW YORK: Tannersville, 1908, *Rydberg* 8037.

Specimens resembling *R. trifrons* are the following:

VERMONT: West Wadsworth, 1904, *Blanchard* 55; Stratton, 1902, *Blanchard* 198.

NEW YORK: Tannersville, 1906, *Rydberg* 7957, 7954 (one sheet of this number Mr. Blanchard has determined as *R. hispidus*, the other as *R. setosus*. Both were from the same plant).

The following are intermediate or cannot be referred to either form:

VERMONT: North Windham, 1903, *Blanchard* 251 (named *R. setosus*); Stratton, 1902, *Blanchard* 199.

NEW JERSEY: Musconetcong River, *Mackenzie* 2108, 2300.

NEW YORK: Tannersville, 1906, *Rydberg* 7956.

CONNECTICUT: Southington, 1904, *Andrews* 60.

Rubus hispidus $\times$ *vermontanus*. In my mind there is very little doubt but *R. jacens* Blanchard represents this hybrid. A

few specimens referred to *R. trifrons* by Blanchard apparently belong here also. The following specimens have been recorded:

VERMONT: Townsend, 1903, *Blanchard* 241; Stratton, 1904, *Blanchard* 55, set 2; South Londonderry, 1903, *Blahchard* 250.

NEW HAMPSHIRE: Alstead, 1903, *Blanchard* 232, 231.

Rubus cubitans Blanchard seems to me to be a mixture. The flowering branches and the new shoots were not collected at the same time. Do they belong to the same plant? The floral branches seem to me as typical *R. hispidus*, though with more flowers than usual. The leaflets of the new shoots have the texture of those of *R. hispidus* but the form of those of *R. vermontanus*. They may very well represent a hybrid.

Rubus argutus $\times$ *hispidus*. This was first recognized by Mr. Bicknell, who, however, did not characterize the same. Only Bicknell's specimens are known.

Rubus canadensis $\times$ *hispidus*. The only specimens seen, which may be referred to this hybrid, are the original ones cited in the North American Flora.

NOVA SCOTIA: Le Have River, *Macoun* 81436a.

NEW YORK BOTANICAL GARDEN